

University of Groningen

Models of massive gravity in three dimensions

de Haan, Sjoerd

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:

2014

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

de Haan, S. (2014). *Models of massive gravity in three dimensions*. [Thesis fully internal (DIV), University of Groningen]. [S.n.].

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Stellingen behorende bij het proefschrift

Models of Massive Gravity in Three Dimensions

- The history of massive gravity follows the trajectory of a roller-coaster with 180 degree loops. The difference is that no one knows how it ends. [Chapter 2]
- New massive gravity is not unitary, since there is a bulk-boundary unitarity clash. [Chapter 3]
- There exists a non-interacting scalar model with six derivatives that leaves a unitary subspace after truncating modes that fall off with a square of a logarithm of the distance to the boundary. [Chapter 4]
- The interacting spin two analog (tricritical gravity) of the higher derivative scalar model mentioned above is only unitary at first order. [Chapter 5]
- Tricritical gravity is dual to a logarithmic conformal field theory of rank three. [Chapter 5]
- Dirac's analysis for counting degrees of freedom can be reduced to a straightforward algebraic procedure in the case of Chern-Simons-like theories in three dimensions. [Chapter 6]
- The bulk/boundary unitarity problem in new massive gravity can be resolved by working with two dreibeine instead of a metric and an auxiliary field. [Chapter 6]
- If we believe the early literature, the number of degrees of freedom of recent theories of massive gravity models fluctuates with a typical time scale of months.
- Linux is only free if your time has no value. [J. Zawinski, www.jwz.org, 1998]

Sjoerd de Haan
13 October 2014